Trade and Industrial Education
Course: HVACR II
Course Code #5742
2 Credits

School Year _____

Term:____Fall____Spring

Student:	Grade:
Teacher:	School:
Number of Competencies in Course:	**50**
Number of Competencies Mastered:	
Percent of Competencies Mastered:	

STANDARD 1.0: Students will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community, and workplace.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
1.1	Demonstrate leadership skills.		
1.2	Use problem-solving techniques to address and propose solutions to school, community, and workplace problems.		
1.3	Demonstrate the ability to work professionally with others.		
1.4	Participate in SkillsUSA-VICA as an integral part of instruction.		

STANDARD 2.0: Students will demonstrate safety practices, including Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) requirements.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
2.1	Determine safe and correct procedures for working with electricity in heating, ventilation, air conditioning, and refrigeration.		
2.2	Use protective clothing, eye protection, and safety equipment.		
2.3	Use fire protection equipment.		
2.4	Follow OSHA and EPA regulations and manufacturers specifications according to the heating, ventilation, air conditioning, and refrigeration.		
2.5	Pass with 100 % accuracy a written examination relating to safety issues.		
2.6	Pass with 100% accuracy a performance examination relating to safety.		
2.7	Maintain a portfolio record of written safety examinations and equipment examinations for which the student has passed an operational checkout by the instructor.		

STANDARD 3.0: Students will relate knowledge and skill pertaining to electricity to heating, ventilation, air conditioning and refrigeration systems.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
3.1	Analyze the basic characteristics of electricity.		
3.2	Apply Ohm's law to heating, ventilation, air conditioning, and refrigeration systems.		
3.3	Examine electrical circuits and components of heating, ventilation, air conditioning, and refrigeration systems.		
3.4	Determine the role of electromagnetism as related to motors.		

STANDARD 4.0: Students will interpret, lay out, and fabricate in conformance to construction drawings and written specifications.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
4.1	Interpret dimensions and locations of components that are explicitly dimensioned in construction drawings and written specification.		
4.2	Scale dimensions that are not explicitly included in construction drawings.		
4.3	Interpret plan and elevation views shown in construction drawings.		
4.4	Recognize and interpret lines and symbols commonly used in construction drawings.		
4.5	Make layouts of locations and elevations of structural elements and heating, ventilation, air conditioning, and refrigeration components.		

STANDARD 5.0: Students will examine the processes used to transfer heat and humidity.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
5.1	Analyze and quantify heat transfer by thermal conductivity.		
5.2	Analyze and quantify heat transfer by convection.		
5.3	Analyze and quantify heat transfer by radiation.		
5.4	Service, and troubleshoot humidifiers in HVAC/R systems.		

STANDARD 6.0: Students will diagnose and service heating, ventilation, air conditioning, and refrigeration systems.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
6.1	Differentiate functions of major components of electric and gas-fired forced-air furnaces.		
6.2	Examine the principles of combustion and control of gas-fired furnaces.		
6.3	Examine the operation and control of electric furnaces.		
6.4	Service and troubleshoot forced-air furnaces.		
6.5	Implement a systematic diagnostic procedure to diagnose and service problems.		

STANDARD 7.0: Students will make psychometric measurements and calculations.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
7.1	Relate the composition of the atmosphere to human health and comfort.		
7.2	Make psychometric measurements.		
7.3	Evaluate air properties and changes in air properties from the psychometric chart.		
7.4	Calculate heating or cooling loads on operating HVAC/R systems from psychometric measurements.		

STANDARD 8.0: Students will design, troubleshoot, and install air distribution systems and components.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
8.1	Determine the air flow requirements for an air distribution system.		
8.2	Compare and contrast types of fans and blowers for air distribution systems.		
8.3	Comprehend and apply the fan laws to air distribution systems		
8.4	Comprehend and troubleshoot controls and sensors used in air distribution systems.		
8.5	Design and evaluate the performance of air distribution systems.		

STANDARD 9.0: Students will demonstrate interpersonal and employability skills required in the heating, ventilation, air conditioning, and refrigeration industry.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
9.1	Infer relationships between honesty, integrity, and organization and personal job success.		
9.2	Demonstrate attitudes conducive to workplace success.		
9.3	Maintain electrical and electronic equipment in a neat and orderly work area.		
9.4	Assess implications of cultural and religious diversity for classroom and workplace relationships.		
9.5	Develop individual and team time management and work sequencing skills to increase productivity in heating, ventilation, air conditioning, and refrigeration diagnostics and repair.		

STANDARD 10.0: Students will communicate skills required in the heating, ventilation, air conditioning, and refrigeration industry.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
10.1	Communicate and comprehend oral and written information pertaining to heating, ventilation, air conditioning, and refrigeration.		
10.2	Solve problems and make decisions using critical thinking process.		
10.3	Use teamwork skills and a logical thinking process to solve problems relating to issues.		

STANDARD 11.0: Students will analyze heating, ventilation, air conditioning, and refrigeration knowledge and skills and apply in a work-based or school project-based learning experience.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
11.1	Apply principles of heating, ventilation, air conditioning, and refrigeration to a work-based or school project-based learning situation.		
11.2	Integrate time management principles in organizing personal schedule to include school, work, social, and other activities.		
11.3	Evaluate and apply principles of ethics as they relate to the work-based or school project-based learning experience.		
11.4	Employ principles of safety to the work-based or school project-based learning experience.		

Additional Comments _____